

# City of Cambridge Stormwater Management Program

Phase II NPDES  
Stormwater Management Program  
Public Meeting  
March 26, 2015

# Clean Water Act

- The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution.
- Growing public awareness and concern led to sweeping amendments in 1972, the law became commonly known as the Clean Water Act (CWA).
- The 1972 amendments:
  - Established the basic structure for regulating pollutants discharges into the waters of the United States.
  - Made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. **Stormwater was not considered a point source discharge**
  - Recognized the need for planning to address the critical problems posed by nonpoint source pollution.

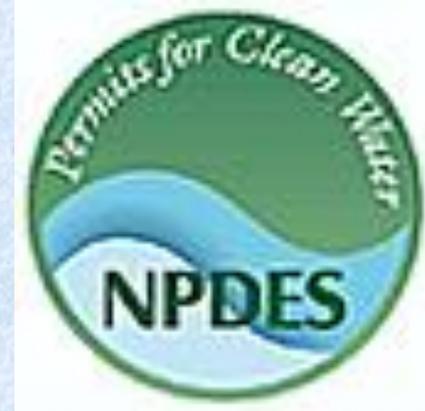


Cuyahoga River, OH



# NPDES:

National Pollutant Discharge Elimination System



## Water Quality Act of 1987 regulated stormwater as a point source discharge

- **1990: Phase I**
  - Regulated stormwater discharges from Municipalities (over 100,00 population), industrial operations, construction sites (>5 acres)
- **1999: Phase II**
  - Regulates stormwater discharges from small Municipalities, 1 – 5 acre construction sites, prisons, state universities, others...
  - Initial Notice of Intent submitted July 2003
  - Currently Completing Year 12
  - Reissued Permit under review – EPA reviewing public comments (over 1700 pages of comments received)

# Impaired Waters

Stormwater discharges are causing or contributing to at least **55%** of the impairments in all Massachusetts' assessed waters

# Pollutants



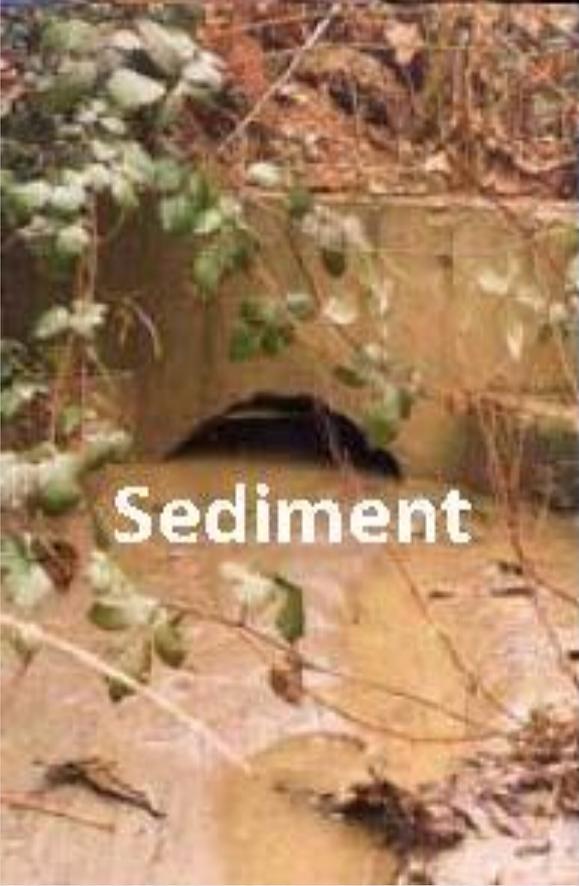
Trash



Heavy Metals



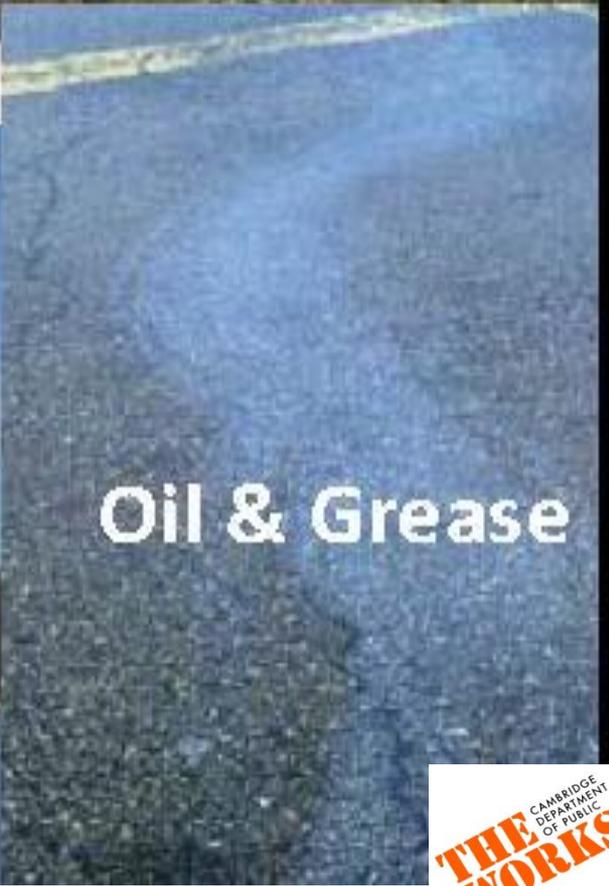
Nutrients



Sediment



Pathogens



Oil & Grease

# Stormwater Management Program

- Address 6 Minimum Control Measures
  1. Public education/outreach
  2. Public involvement/participation
  3. Illicit discharge detection/elimination
  4. Post-construction stormwater management
  5. Construction Site stormwater runoff control
  6. Pollution prevention/good housekeeping for municipal operations
  
- Develop and implement Best Management Practices to address each program area



# Program Objective

## Fishable and Swimmable



Reduce discharges of pollutants from a regulated stormwater system (MS4) to the *maximum extent practicable*, to protect water quality.



**Runoff Discharges  
to Nearby Waters**



# #1. Public Education & Outreach

- Alewife Sewer Separation Project
  - Concord Ave construction began February 2014 60% subsurface complete
  - Huron B construction 80% subsurface complete
  - Huron A construction substantially complete
- Neighborhood Outreach – BBQ Sept 4
- Rain Barrel Promotion – May 22, 2014
  - Displays around City – DPW, City Hall, Water Dept.
  - Partnered with Green Cambridge for installation
  - Sold 100 barrels
- Curb Marker installations
- FAR Park Serve Day
  - April 26 2014



# #1. cont. Public Education & Outreach

- Web Site updates
- Youth Outreach
  - DPW Road Show – May 19
  - Team Green Sense – Deer Island Tour – July 16
  - Team Green Sense – Wetland Tour – July 17
- Cambridge Life article
  - Alewife Wetland
- City View article
  - Climate Change



Green Sense – Deer Island Tour

**City View** SUMMER 2014

### Seeing Cambridge in a New Light

The City of Cambridge will soon be implementing major improvements to the existing streetlighting system: every City-owned streetlight to be replaced with new LED lights by 2015.

Over the coming months, Cambridge residents will start to see the old "cobrahead" style streetlights systematically replaced with new LED lights. The most current, energy efficient technology, combined with careful street planning, is slated to reduce the City's streetlight energy usage. An energy efficiency incentive program offered by NSTAR will contribute up to \$700,000 for the cost of new lights.

Using detailed information from the City's Geographic Information Systems (GIS) database, as well as on-site evaluations, streets were evaluated for width, light pole

**City Manager Reflects on the Fiscal Year 2015 City Budget**

In April, I submitted my first budget to the City Council, taxpayers, and residents of Cambridge. It was a bold agenda for the City and I believe that the initiatives and spending priorities reflect not only the goals of the City Council, but also those of the residents and taxpayers of Cambridge.

Having worked for the City for the past 43 years, I am wholeheartedly committed to ensuring that we embrace our employees. This year I am creating new opportunities to build "stretch strength" across the City's organization, an investment that will not only support and prepare employees to grow professionally but will also develop the next wave of City leaders to address the needs of our community.

**Four Budget Priorities and One Promise**



**The Cambridge Life** Official Magazine of the City of Cambridge

2014-2015 EDITION

**ALEWIFE WETLAND WONDER**

**Also in this issue:**  
Cambridge Youth Programs | Open Space in East Cambridge  
Taking Firefighting to a New Level | One-on-One Job Coaching  
Ten Historic Facts

**LEGALIZED HOME SEX MARRIAGE**

# #2. Public Participation & Involvement



- Stormwater Wetland Tours – (4) May 2, July 17, and August 21
- Household Hazardous Waste Collection (4) May 3, June 7, Aug 23, Oct 4
- Annual Meeting March 25



# #3. Illicit Discharge Detection & Elimination



Prohibit, identify and remove illicit connections and discharges

- Water quality sampling
  - Charles –Dry, wet, Oil & Grease
  - Alewife - Dry, wet, Oil & Grease
- Illicit Connections Identification/Removal
  - 0 identified and removed
- Automatic Sampling Stations (5)
  - 90% designed (Harrison Ave, Stormwater Wetland (2), Western Ave, Sparks St at Foster)





# *Don't dump into drains!*



**Contractor is responsible for all sediment, dewatering, and discharge from construction site.**

# Erosion and Sediment Control

Get a dewatering permit from EPA / MWRA and City of Cambridge before dewatering

Stabilized construction entrance/exit and Street Sweeping reduce storm water pollution



# Erosion and Sediment Control

No washing concrete into the street/ tree wells/ drains



Good example of Concrete Wash Out with designated site



# Construction Best Practices



# #5. Post Construction Stormwater Management



Address runoff from significant new and redevelopment projects through the use of BMPs

- Stormwater Control Permit's submitted – 12 (approved - 4)
- Post Construction BMP Inspections - 18
- Database maintained for private BMP facilities



23 Sidney Street – Green Roof



Manhole Inspection



211 + 311 Alewife Brook Par  
Drainage swale

# Private Development Stormwater Management Requirements

- (a) Store on site the difference between the 2 yr 24 hr preconstruction runoff and the 25 yr 24hr post construction runoff
- (b) Manage stormwater runoff such that there is a reduction of 80% TSS from site and a 65% reduction of P from Site.
- (c ) Manage sewer discharge so as to ensure no increase in CSOs or SSOs.





# #6. Pollution Prevention & Good Housekeeping for Municipal Operations

- Street Sweeping– mechanical and vacuum
  - 2035 tons of street sweeping debris
  - 2136 catch basins cleaned (442 tons)



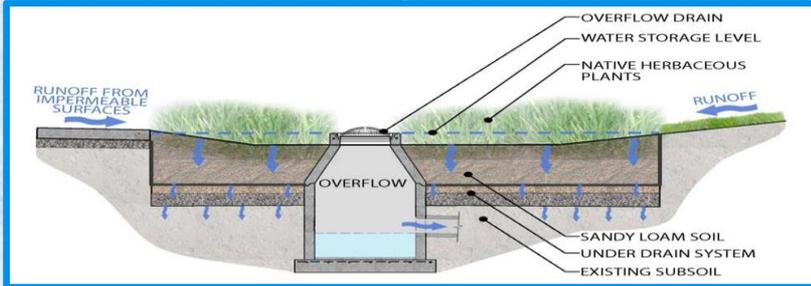
Street Sweeping

- Stormwater Projects

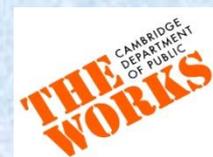
- ✓ Porous Asphalt:
  - ✓ Fawcett Street 7,644 SF
  - ✓ Western Ave – 10,000 SF
  - ✓ Huron A/Huron B/Concord (in construction)
- ✓ Rain Gardens/Biobasins:
  - ✓ Fawcett Street (4)
  - ✓ Alewife Sewer Separation (6) – in construction
  - ✓ Western Ave (Cronin Park) – in construction
- ✓ Infiltration Basins - Binney St – 9 basins serving 18 catch basins



Porous Pavement



Biobasin



# #6. Cont: Pollution Prevention & Good Housekeeping for Municipal Operations

- Trees Planted – 442
- Municipal Facility Inspections
  - ✓ 156 +/- total facilities
  - ✓ 47 inspected Year 12 (to date)
- Employee Training
  - ✓ 37 Employees trained on BMPs
  - ✓ 8 Employees trained on O&M for stormwater wetland and drainage infrastructure



# Year 12: Capital Improvement Projects

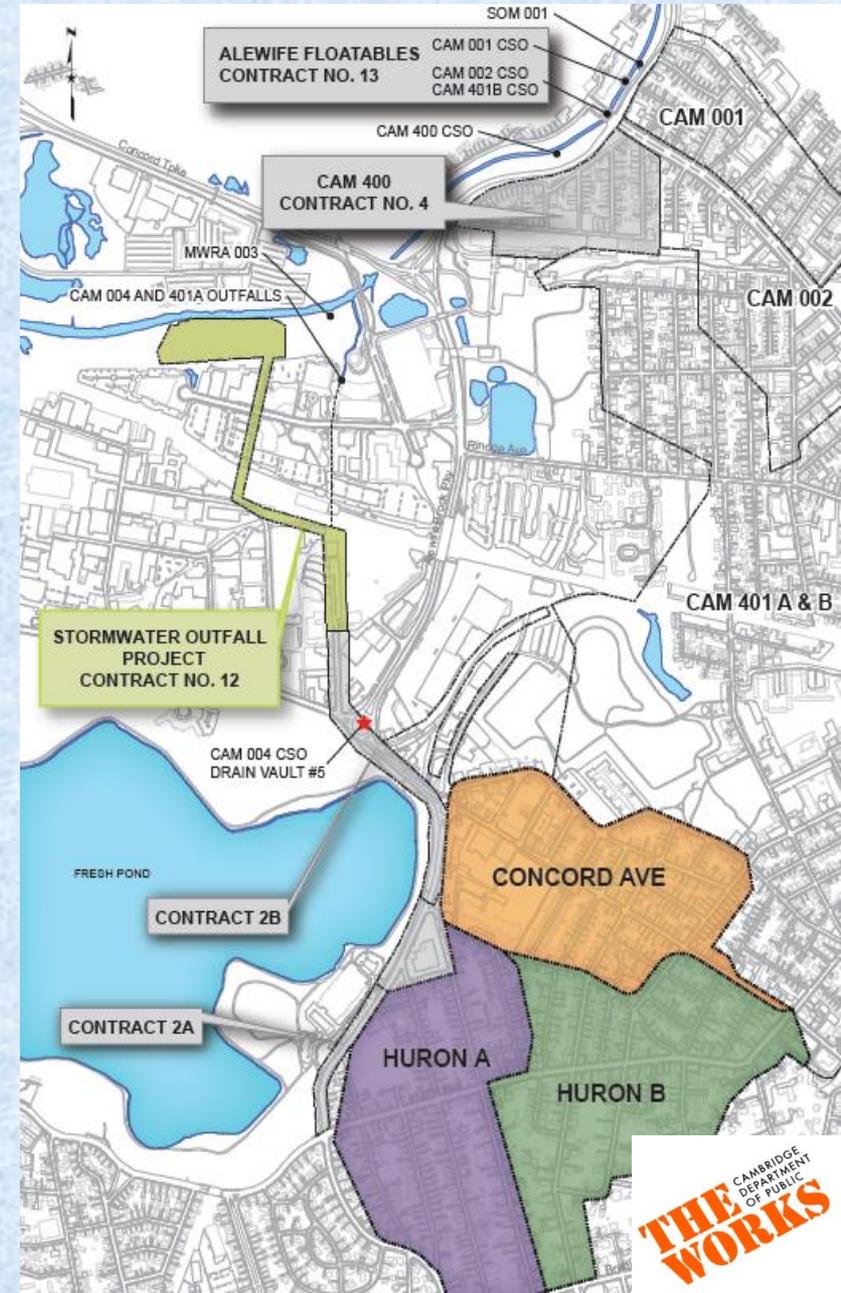
- Alewife Sewer Separation Project
  - Huron A: sewer separation, infiltration systems, bio basins 100% subsurface completed, surface restoration (biobasins planted and porous asphalt 2015)
  - Huron B: sewer separation, infiltration systems 80% subsurface completed (construction started 9/2013)
  - Concord Ave Area: sewer separation, infiltration systems, bio basins 60% subsurface completed (const started 3/2014)



# Alewife Sewer Separation

## MWRA's LTCP for CSO Control

- Sewer separation of CAM004 (Huron A, Huron B and Concord Ave)
- Closure of the CAM004 regulator
- Reduces volume and frequency of CSOs to the Alewife Brook
  - 50mg annually → 7.3mg
  - 63 activations per year → 7





**THE WORKS** CAMBRIDGE DEPARTMENT OF PUBLIC WORKS  
**Alewife Sewer Separation Project**  
Example Construction Progress Photos  
September 2014

# Capital Improvements cont.

- Western Ave Sewer Separation/Stormwater Mgmt:
  - sewer separation, new outfall and infiltration systems **95% completed**
- Fawcett Street
  - Sewer and drain improvements, porous pavement and biobasins **100% completed**
- Binney Street Drainage improvements
  - Drain improvements, 9 infiltration basins for 18 catch basins **100% completed**
- SCADA Improvements - real time monitoring of pump station and CSO's, added CAM002, Bellis Circle, Francis St, Yerxa, Little Fresh Pond, Broadway tank, Hovey St tank **100 % complete**



# Climate Adaptation Plan

Part 1: vulnerability assessment to be completed in early 2015

March 17 public meeting

Part 2: climate change preparedness plan began (2 year effort)

**KLEINFELDER**  
High Impact. High Solutions.

## Climate Change Services



High	Low	Medium	High	Very High	<b>Priority-planning areas</b>
Medium	Low	Medium	High	Very High	
Low	Low	Medium	High	Very High	



**Step 1**  
Climate Projections  
Scenario Development

**Step 2**  
Vulnerability & Risk Assessment

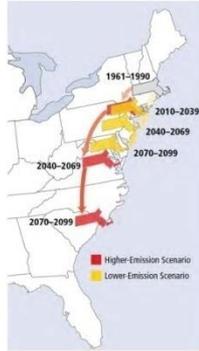
**Step 3**  
Adaptation Planning and Design

14

**KLEINFELDER**  
High Impact. High Solutions.

## Climatic Parameters

**Temperature**



**Precipitation**



**Sea level rise**



**More extreme events**



15

# Highlights for next permit year



- Complete Alewife Sewer Separation of CAM004
- Kirkland St/Robert Rd sewer separation design
- Willard St. outfall re-establishment design and construction
- Concord Lane sewer separation construction
- Bishop Allen flood control design
- Roseland St/Newport Rd sewer separation - design
- Sewer 5-year Plan sewer and drain condition assessment and rehabilitation plan – construction on high priority



# Highlights of the Draft NPDES Permit

- EPA to review comments, respond to comments and finalize permit
- Water Quality Response Plan for Impaired Waters (w/o a TMDL)
  - ID Source of impairment: Bacteria, Nutrients, Metals, Chloride, Oil & Grease, Solids
  - ID BMPs and pollutant source
  - Implement BMPs
  - Assess effectiveness and modify BMPs
- Water Quality Response Plan for Impaired Waters (TMDL)
  - Phosphorous (Charles River)
  - Bacteria & Pathogens (Charles River)
- Targeted Public Education (residents, business/commercial, developers, industrial facilities)
- Wet and Dry Weather sampling – defined catchment areas and prioritization
- Impervious area assessment and reduction, emphasis on infiltration
- Identify & rank properties for BMP retrofitting
- Public Review of SWMP

# Comments/Questions